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GAO

Report to the Chairman, Subcommittee on
Civil and Constitutional Rights,
Committee on the Judiciary, House of
Representatives

August 1988

30
FBI VOICE PRIVACY

Update on Program
Direction



Information Management and
Technology Division

B-226295

August 30, 1988

The Honorable Don Edwards
Chairman, Subcommittee on Civil
and Constitutional Rights
Committee on the Judiciary
House of Representatives

Dear Mr. Chairman:

This report responds to your March 10, 1987, request that we continue our evaluation of the Federal Bureau of Investigation's (FBI) voice privacy program. As noted in our earlier report,¹ the FBI initiated a nationwide program in 1982 to install new communications technology that would protect its radio messages from interception by criminal elements, the news media, and the general public. The program was expanded in 1985, when the Attorney General gave the FBI lead responsibility for integrating into one system, the individual voice privacy systems being developed separately by the FBI, Drug Enforcement Administration (DEA), and United States Marshals Service (USMS).

During a January 15, 1988, meeting with your office, we noted that the integrated voice privacy program had been undergoing substantial changes in direction since we had initiated our audit work. In light of these changes, we agreed to provide the Subcommittee with a report that (1) discusses the original and revised approaches to an integrated voice privacy system, (2) summarizes the impact of the redirection on program costs and milestones, and (3) presents observations and questions for the Subcommittee's consideration. Appendix I describes our assignment objectives, scope, and methodology.

Background

While the integrated voice privacy program was formally initiated in 1985, part of the impetus for the program can be traced back to 1981. At that time, the Attorney General was considering merging the FBI and DEA into a single organization, and was exploring the effect of such a merger on various aspects of the two agencies' operations—including the radio communications systems. In January 1982, the Attorney General delegated to the FBI the authority to investigate drug-related crimes, in coordination with DEA. The FBI and DEA were beginning to implement

¹FBI Voice Privacy: Cost, Status, and Future Direction (GAO/IMTEC-87-4, Feb. 27, 1987) and supplemental report (GAO/IMTEC-87-4S, Mar. 8, 1988).

their own internal voice privacy systems at this time and, at various times between 1981 and 1984, reviewed the feasibility of combining their respective systems.

In 1985, a review of Department of Justice programs by the Department Resources Board further influenced the decision to develop an integrated voice privacy program that would support not only the radio communications needs of the FBI and DEA, but also those of USMS. The Attorney General had established the board on June 14, 1985, to assist in managing Justice's programs and operations. According to FBI and DEA officials, the board's review showed that the three agencies were each procuring similar equipment for their individual voice privacy systems and the Deputy Attorney General, who chaired the board, asked the FBI to review the possibility of a combined system. The FBI Director responded with an August 19, 1985, action memorandum to the Attorney General, requesting approval of an FBI-led, integrated voice privacy system. The Attorney General approved the Director's request on August 28, 1985.

At the time the integrated program began (the end of fiscal year 1985), all three agencies were implementing individual voice privacy radio systems—each with some basic similarities and important differences. In terms of similarities, FBI, DEA, and USMS were each installing Motorola, Inc., voice privacy systems, which consist of four main components: (1) radio units, which are either hand-held or mobile (that is, located in vehicles); (2) base stations, which receive and transmit radio communications within a limited geographical area; (3) repeaters, which extend—to some degree—the communications range of the base station; and (4) consoles, which control the network of base stations and repeaters. To increase the capacity and coverage of the basic radio system for each of its field offices, the FBI also planned to install microwave equipment for long-distance radio communications.

In terms of differences, the agencies' systems were incompatible in two key areas: (1) frequency bands and (2) encryption methods. The radio frequency spectrum is divided into eight available bands—ranging from the very low frequency band to the extremely high frequency band—which support all types of radio communications. These frequency bands have finite parameters and must be shared to meet the growing demands of both government and nongovernment users. To avoid interference and other problems, use of the radio frequency spectrum is regulated by the federal government. Both FBI and USMS operate on

frequencies within the very high frequency (VHF) band, while DEA operates on frequencies in the ultra high frequency (UHF) band. In addition, each voice privacy system uses an encryption method—which codes voice signals before transmission over radio frequencies—to protect communications from interception by external groups. FBI and DEA radio systems use the federal government's Data Encryption Standard, while USMS uses a Motorola, Inc., proprietary encryption scheme.

Following the August 1985 approval of the integrated program, the FBI continued work on its internal voice privacy system, while the systems being implemented at DEA and USMS were put on hold. As of the end of fiscal year 1985, the FBI had contracted for voice privacy systems in 36 of its 59 field offices. It had accepted one field office system as complete and provided voice privacy equipment to surveillance squads in 19 field offices—at a cost of \$16.8 million. DEA had completed voice privacy systems in 6 of its 19 field divisions at a cost of about \$10 million, and USMS had completed approximately 75 percent of its radio system, also at a cost of about \$10 million. Appendix II provides additional information on the three agencies, and their respective voice privacy systems.

Original Approach: A Fully Integrated Voice Privacy System

The FBI's original approach to an integrated voice privacy system was one of full integration—with the objective of fully converting DEA and USMS to the FBI's voice privacy system. According to the FBI Director's August 19, 1985, action memorandum, an FBI-led, integrated system would result in significant advantages, including a uniform, consistent approach to managing one system across the three agencies; expanded geographic coverage for DEA and USMS; and cost benefits from eliminating duplicate and/or overlapping system components. The Director also emphasized that a single system would facilitate joint operations, particularly between the FBI and DEA on drug-related cases.

To implement full integration nationwide, the FBI planned to provide DEA with equipment that used the VHF frequency band and USMS with equipment that used the Data Encryption Standard—the same encryption method used by the FBI. The FBI also planned to enhance its microwave system by (1) increasing its capacity to accommodate DEA and USMS radio communications; (2) extending it to DEA and USMS field locations through base stations or repeater connections at microwave sites; and (3) connecting microwave equipment between each of the FBI's 59 field offices, as needed, creating a nationwide microwave network.

While key DEA and USMS program officials agreed that the fully integrated system sounded efficient and effective in theory, they told us that—from the beginning of the program—they questioned its technical, operational, and economical feasibility. According to these officials and our review of program documentation, DEA and USMS raised these questions with the Department of Justice and the FBI on several occasions. For example, DEA questioned if a sufficient number of VHF frequencies were available to fully integrate the three agencies. In addition, the USMS Director formally raised concerns about the feasibility of an integrated system in an August 1985 letter to the Deputy Attorney General, and later in a September 1986 letter to the FBI Director. USMS preferred to continue with its existing system, noting that it seldom conducted joint operations with either the FBI or DEA, and had almost completed an encrypted system that would adequately meet its needs. While FBI program officials acknowledged these questions and concerns, they told us that they continued with the program because, in their judgment, full integration was feasible and the FBI could obtain the needed VHF frequencies.

FBI's Steps Toward Integration

According to the FBI Director's August 1985 action memorandum, initial analyses showed that expanding the FBI's internal voice privacy system to accommodate DEA and USMS was the best approach to achieve integration, and added that further studies would be necessary to gain the insights needed to prescribe near-term courses of action. The FBI planned to conduct these studies in parallel with its start-up actions. Appendix III outlines a chronology of the key events in the integrated voice privacy program.

During the 1985 to 1987 period, FBI, DEA, and USMS participated in studies and analyses that addressed different aspects of a fully integrated system. In April 1985, prior to the approval of the integrated voice privacy program, the FBI initiated a test of an integrated FBI-DEA radio system—which the FBI refers to as the testbed—in its Boston field office. This testbed was initially established as part of a cooperative venture to identify and facilitate joint activities between FBI and DEA. According to FBI and USMS program officials, USMS was not added to the testbed because of cost constraints.

During this period, the FBI also hired external consultants to evaluate system alternatives and determine radio channel and frequency requirements for FBI, DEA, and USMS in the northeast region. Appendix IV describes the results of the testbed, analysis of alternatives, and the

radio channel and frequency studies. As indicated in appendix IV, a principal message resulting from the radio channel and frequency studies was that sufficient VHF frequencies were not available in the northeast region to fully integrate the three agencies on the FBI's system. For example, one external consultant estimated that 151 frequencies would be needed to fully integrate the FBI, DEA, and USMS in the northeast region. The Department of Justice has only 82 VHF frequencies available for the entire Department. While information provided by these studies contributed to a redirection of the program, we did not find any evidence that the FBI prepared a comprehensive requirements analysis of the volume and geographical distribution of radio communications traffic among the three agencies that would be handled by a nationwide, fully integrated system.

Revised Approach: An Interoperable Voice Privacy System

Citing the lack of a sufficient number of available frequencies as a key factor, FBI, DEA, and USMS began formulating major changes to the integrated voice privacy program in October 1986. The revised approach emphasizes radio communications interoperability (that is, having incompatible radio systems that can communicate through a technical interface) rather than full integration. In July 1987, the FBI began implementing an interoperable system to support FBI, DEA, and USMS operations, beginning in the northeast region. Since then, the approach to achieving interoperability has evolved in terms of participants and system configuration. The table in appendix V summarizes the key differences between the FBI's original approach, which envisioned full integration, and its revised approach, which has progressed from full interoperability to limited interoperability.

Interim Approach: Achieving Full Interoperability Nationwide, Beginning in the Northeast Region

To achieve interoperability within frequency constraints, the FBI took steps toward implementing an approach in the northeast region that would use both UHF and VHF frequencies for radio communications among the three agencies. In March 1987, FBI and DEA officials agreed that DEA would need to retain its UHF system and selectively interface with the FBI's system. The FBI also planned to provide DEA and USMS with increased geographic coverage and access to an expanded microwave system. However, USMS reemphasized its preference to continue with its own system.

¹A radio channel is a setting on a radio unit establishing fixed frequencies for receiving and transmitting radio signals.

As of July 31, 1987, the FBI planned to implement the following approach in the northeast region.

- In the metropolitan areas of Boston and New York City, the FBI would operate on the VHF band and DEA would operate on the UHF band. The two agencies would communicate by connecting an FBI repeater (VHF) to a DEA repeater (UHF)—a technique known as cross-banding, which converts radio signals from one frequency band to another frequency band. FBI and DEA planned to activate these repeaters for joint operations. Otherwise, the repeaters would operate independently.
- In FBI resident agencies and DEA resident offices¹ outside the metropolitan areas of Boston and New York City, both agencies would operate on the VHF band. For its vehicles, DEA ordered dual band radios—which contain both VHF and UHF components—to allow DEA agents in resident offices to access the FBI's VHF system, and switch to the UHF frequency band when entering the Boston or New York metropolitan areas. For joint operations requiring hand-held radios, the FBI and DEA would share either UHF or VHF radios.

The FBI anticipated that USMS would begin to convert its internal system to the Data Encryption Standard, allowing it to access the FBI system from any location in the northeast region. The FBI also planned to continue with the expanded microwave system to accommodate DEA and USMS.

Current Approach: Achieving Limited Interoperability Nationwide

In December 1987, the FBI and DEA began implementing the above interoperable strategy nationwide—with several significant changes. The FBI honored USMS' preference to independently continue with its internal radio system, which used the Motorola, Inc., proprietary encryption scheme rather than the Data Encryption Standard, and USMS was dropped from the program. The key reasons cited for this decision were sufficiency of USMS' existing radio system and lack of a need for joint radio communications capability with FBI or DEA. In addition, because of governmentwide budget constraints, the FBI decided not to enhance and connect its microwave system nationwide, which was estimated would cost the FBI about \$125 million. It would, however, continue with the internal voice privacy system it had initiated in 1982, with minor

¹Resident agencies and resident offices are small local offices that are subordinate to the FBI field offices and DEA field divisions, respectively.

changes (for example, including repeaters for cross-banding) to accommodate DEA. The Attorney General approved the strategy for limited interoperability on March 25, 1988.

Under the current approach, FBI and DEA officials plan to cross-band one set of repeaters, as necessary, in each of DEA's 19 field divisions, which are located in major metropolitan areas. As in the interim approach, DEA will install dual band radios in all resident office vehicles. In addition, DEA officials told us that they now plan to install dual band radios in the metropolitan areas of all DEA field divisions—except for six divisions that have a VHF-only voice privacy capability and three northeast divisions, where sufficient funding is not available to equip its large vehicle inventory with dual band radios.

Factors That Could Influence Future Program Direction

According to FBI and DEA program officials, some key factors could influence the current approach to an interoperable system. FBI and DEA officials noted that they still need to finalize some details of the system configuration (for example, where to locate cross-band repeaters to achieve desired coverage) and system operation (for example, how to manage encryption codes on joint operations), and that some aspects of the approach could change as these details are resolved.

DEA program officials also noted that an increased recognition of the need for interoperability across the law enforcement community and advances in telecommunications technology could influence future radio communications systems. For example, DEA cited the Interagency Working Group on Drug Enforcement Communications¹ as providing a valuable forum, at the federal level, for addressing the need for a secure and interoperable communications capability for drug-related operations. As a result of the working group efforts, a telecommunications master plan that discusses interoperability requirements and recommends interim standards and procedures for agencies to use in their internal telecommunications plans is expected to be issued by the end of fiscal year 1988. Both FBI and DEA officials participate in the working group and have informed the group of their current approach to achieving an interoperable system.

¹The Interagency Working Group on Drug Enforcement Communications was formed in April 1987 by the Secretary of Defense, in response to National Security Decision Directive 221, "Narcotics and National Security."

DEA officials pointed out that using dual band radios will facilitate their joint operations not only with the FBI, but also with other law enforcement entities that currently operate on the VHF band. These officials indicated that future telecommunications technology should provide additional capabilities to promote interoperability across the law enforcement community, thereby streamlining multi-agency operations.

Cost and Milestone Estimates—Impact of the Redirection

Redirecting the integrated voice privacy program to achieve limited interoperability will, according to FBI and DEA officials, provide needed radio capabilities for joint operations at a much lower cost than the original, fully integrated system, and within a comparable time period.

The FBI estimated that an integrated voice privacy system would collectively cost FBI, DEA, and USMS about \$153.2 million over the costs of installing their respective internal voice privacy systems, with the FBI assuming the majority of the costs. The enhanced microwave system was the key cost factor in implementing a fully integrated system. In comparison to full integration, FBI and DEA expect the total cost of the revised approach (that is, achieving limited interoperability) to be about \$7.4 million over the costs of their respective internal systems, with DEA assuming this additional cost. Dual band radios are the key cost factor in the revised approach. Completion dates provided by FBI and DEA program officials for both approaches are comparable, with a projected completion of 1991 for full integration and 1992 for limited interoperability.

Under the revised approach, both FBI and DEA will be proceeding with their respective voice privacy systems—altered as necessary to achieve limited interoperability. While cost estimates for this approach may change as key factors are finalized, FBI officials expect that they can achieve limited interoperability within the current \$205.8 million cost estimate for their internal radio and microwave system.³ This estimate includes all costs associated with implementing the FBI's internal voice privacy program nationwide, with minor changes (that is, cross-band repeaters) to achieve limited interoperability. Appendix VI summarizes the status of the FBI's voice privacy program as of April 15, 1988.

With respect to DEA, program officials estimate that purchasing interoperable equipment (for example, dual band radios and cross-band

³Our earlier reports on FBI voice privacy, GAO/IMTEC-87-4 and GAO/IMTEC-87-4S, questioned the reliability of the \$205.8 million estimate.

repeaters), at the current agent staffing level, will add about \$7.4 million to DEA's \$40 million cost projection for providing UHF-only, voice privacy radio capability to all 19 field divisions. As of April 15, 1988, DEA officials told us they have obligated about \$35 million for all mobile and portable equipment, including dual band radios; fixed equipment for three northeast field divisions; and complete UHF-only systems for six field divisions. DEA projects its interoperable system will be complete in 1992.

Observations and Questions for Consideration

In our earlier report entitled, FBI Voice Privacy: Cost, Status, and Future Direction (GAO/IMTEC-87-4, Feb. 27, 1987), we raised concerns about delays and cost increases in the FBI's internal voice privacy program and suggested that the FBI did not adequately analyze its needs before contracting for and acquiring its internal system. We also recognized that the FBI had initiated the integrated voice privacy program and expressed concern that the requirements for a fully integrated system might be similarly undefined.

During our evaluation of the integrated voice privacy program, we did not find the comprehensive requirements analysis that one would expect for a program of this size, cost, and complexity. While the FBI and DEA did conduct a number of studies and analyses that focused on selected aspects of full integration, we did not find evidence that the FBI prepared a comprehensive requirements analysis of radio communications needs among FBI, DEA, and USMS, including radio traffic volumes associated with agency-specific and joint operations nationwide.

The absence of a comprehensive requirements analysis could at least in part account for the substantial changes that have occurred in the integrated voice privacy program since its initiation in 1985. Initially, the program was conceived of as a single, fully integrated system with an enhanced microwave network that would allow FBI, DEA, and USMS agents to communicate with each other, as needed, essentially from anywhere in the country. At present, the program is conceived of as an interoperable system that allows FBI and DEA agents to communicate within field locations, but without the nationwide coverage provided by the enhanced microwave network. According to FBI and DEA officials, this current approach satisfactorily meets their respective radio communications needs and reduces the estimated cost of the program from \$153.2 million to \$7.4 million.

The current interoperable approach may achieve the desired degree of interoperability between FBI and DEA. However, details regarding the precise configuration of the system and key operational procedures have yet to be finalized. In addition, increased recognition of the need for interoperability across the law enforcement community and advances in telecommunications technology could affect the future direction of the program. Given the history of the integrated voice privacy program, it is important that any major changes in the future be supported by an appropriate requirements analysis that would provide a measure of visibility and confidence that the approach is sound.

In view of the evolving nature of the integrated voice privacy program, the absence of a comprehensive requirements analysis, and the possibility that some aspects of the program could change, the Subcommittee may want to pursue with the FBI the following questions:

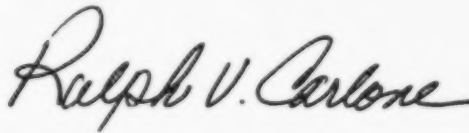
- Since the current approach does not provide an enhanced, interconnected microwave capability, to what extent (if any) might FBI's and DEA's needs for an efficient, nationwide communications capability to support joint, drug-related operations be compromised? By not investing the approximate \$125 million for this microwave capability, how will quantifiable benefits be affected?
- With the increased recognition of the need for interoperability across the law enforcement community and advances in telecommunications technology, what are the FBI's and DEA's plans for preparing a comprehensive requirements analysis for future radio communications systems implemented after 1991 and 1992, respectively?

Agency Comments and Our Evaluation

The Department of Justice provided comments on a draft of this report on July 20, 1988. These comments (see app. VII) did not address our observations, but included supplemental information relating to the planning, evaluation, and implementation of the integrated voice privacy program.

As arranged with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from its issue date (see p. 1). At that time, we will send copies of this report to the Chairmen, Senate and House Committees on Appropriations, House Committee on Government Operations, and Senate Committee on Governmental Affairs. We will also send copies to interested parties and make copies available to others upon request.

Sincerely,

A handwritten signature in cursive script that reads "Ralph V. Carlone". The signature is written in dark ink and is positioned above the printed name and title.

Ralph V. Carlone
Director

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Abbreviations

DEA	Drug Enforcement Administration
FBI	Federal Bureau of Investigation
GAO	General Accounting Office
IMTEC	Information Management and Technology Division
UHF	Ultra High Frequency
USMS	United States Marshals Service
VHF	Very High Frequency

Objectives, Scope, and Methodology

On March 10, 1987, the Chairman, Subcommittee on Civil and Constitutional Rights, House Committee on the Judiciary, requested that we continue our evaluation of the FBI's voice privacy program, noting that our earlier report¹ had raised important questions that warranted further review. During a January 15, 1988, meeting with a representative of the Subcommittee, we noted that the integrated voice privacy program had substantially changed direction since we had initiated our audit work. As agreed in that meeting, we are providing the Subcommittee with a report that (1) discusses the original and revised approaches to an integrated voice privacy system, (2) summarizes the impact of the redirection on program costs and milestones, and (3) presents observations and questions for the Subcommittee's consideration. We performed our work between March 1987 and April 1988.

We primarily conducted our audit work at the FBI, DEA, and USMS headquarters in the Washington, D.C., metropolitan area, and the respective agency field locations in Boston, Massachusetts and San Francisco, California. At these locations, we interviewed agency officials responsible for the radio communications programs and reviewed applicable documentation relating to the integrated voice privacy program. We also interviewed officials from the Justice Management Division, Department of Justice; the National Telecommunications and Information Administration, Department of Commerce; Motorola, Inc.; and the Interagency Working Group on Drug Enforcement Communications.

To obtain status information on the FBI's internal voice privacy program, as well as update the status of the FBI's voice privacy contracts, we reviewed correspondence, contract-related documents, and contract files at FBI headquarters and Motorola, Inc. We also interviewed key officials and reviewed contract-related documents and correspondence at FBI field offices in San Francisco, California, and Washington, D.C.

As agreed during the January 15, 1988, meeting with a representative of the Subcommittee, we did not specifically evaluate the procurement processes, contract methods, or funding and invoicing procedures for the internal voice privacy programs at FBI, DEA, and USMS, or for the integrated voice privacy program. We also did not evaluate the methodology for estimating the costs of the interoperable voice privacy approach or the methodologies used in the various analyses and studies discussed in appendix V.

¹FBI VOICE PRIVACY: Cost, Status, and Future Direction (GAO IMTEC-87-4, Feb. 27, 1987) and supplemental report (GAO IMTEC-87-4S, Mar. 8, 1988).

Appendix I
Objectives, Scope, and Methodology

Our work was performed in accordance with generally accepted government auditing standards. The Department of Justice provided written comments on a draft of this report. These comments are included in appendix VII.

Participants in the Integrated Voice Privacy Program—Agency Characteristics at Program Initiation (End of Fiscal Year 1985)

Characteristic	AGENCY		
	FBI	DEA	USMS
Mission	Investigates violations of federal law, unless assigned by legislative enactment to another federal agency	Controls narcotic and dangerous drug abuse through enforcement and prevention programs	Supports the federal judicial system through protection of witnesses, courtroom security, execution of warrants, and custody/transportation of prisoners
Number of Field Locations	59 Field Offices	19 Field Divisions	94 Judicial Districts
Number of Sublocations (Approximate)	400 Resident Agencies	96 Resident Offices, 5 District Offices	150 Sublocations
Approximate Number of Agents	8,800	2,400	1,500
Frequency Band of Existing Radio System	VHF	UHF	VHF
Encryption Method of Existing Radio System	Data Encryption Standard	Data Encryption Standard	Motorola proprietary
Status of Existing Voice Privacy System	One field office fully operational at a cost of \$16.8 million, with 36 offices under contract	Six field divisions fully operational at a cost of \$10 million	System 75 percent complete at a cost of \$10 million
Need for Increased Geographic Coverage of Radio System	Major changes in demographics and the types of cases pursued	Locality of drug abuse cases shifts with the population changes in urban centers	Agents sometimes out of range when transporting prisoners in remote areas
Primary Reason to Integrate	Drug-related Cases	Drug-related Cases	Prisoner Transport
Method of Conducting Joint Operations	Share equipment with other agencies	Share equipment with other agencies	Share equipment with other agencies

Chronology of Key Events in the Integrated Voice Privacy Program (1985 To 1988)^a

Date	Description
4/18/85	FBI Boston issues memorandum establishing parameters for a joint FBI/DEA radio system, to provide DEA with voice privacy communications protection increased geographic coverage, and a joint communications capability
8/19/85	Through an action memorandum from the Director, FBI, the FBI requests to take the lead in developing a single, integrated digital voice privacy system to support the joint operations between—and meet the radio communications needs of—FBI, DEA, and USMS
8/28/85	Attorney General approves FBI request to take the lead in developing an integrated voice privacy system for FBI, DEA, and USMS
8/30/85	FBI begins installing spare FBI mobile radios in DEA Boston field division vehicles in preparation for a test of an integrated FBI-DEA radio system—which the FBI refers to as the testbed. FBI anticipates all equipment (both fixed and non fixed) will be completely installed by spring 1986 and expects to accept the system as complete from the contractor in August 1986
9/26/85	Through a modification to one of its internal voice privacy contracts, FBI procures testbed equipment—and installation of fixed equipment—from Motorola, Inc. at a cost of \$999,778. FBI anticipates replenishing its supply of spare mobile radios, provided to DEA in August 1985, with equipment purchased through the modification
2/18/86	FBI enters into a formal agreement with the Institute for Defense Analyses to conduct a review of alternatives for the integrated voice privacy system in the northeast region of the country, at a cost of \$250,000
4/2/86	The Institute for Defense Analyses briefs FBI on work to date. As a result of information provided during the briefing, FBI decides to request a follow-on analysis of radio channel needs in New York City
4/15/86	FBI formally tasks the Institute for Defense Analyses—at a cost of \$150,000—with determining the number of channels needed to support the daily operations of FBI, DEA, and USMS in New York City
5/21/86	DEA begins an internal study to analyze its radio traffic in New York City, in support of the Institute's radio channel analysis
7/1/86	FBI Boston field office prepares an internal memorandum outlining a myriad of logistical testbed problems—both technical and operational—primarily stemming from the different patterns of operation of the two agencies
10/2/86	FBI contracts with Spectrum Analysis and Frequency Engineering, Inc. to determine the frequency requirements to integrate FBI, DEA, and USMS in the northeast region. Total cost of this procurement is \$69,990. (See app IV for additional information on this study.)
10/28/86	FBI formally advises Motorola, Inc., that it has taken over installation of remaining fixed equipment for the testbed from the contractor because of numerous installation problems and delays
11/13/86	DEA issues its radio traffic analysis of New York City. (See app IV for additional information on this study.)

(continued)

Appendix III
Chronology of Key Events in the Integrated
Voice Privacy Program (1985 To 1988)

Date	Description
12/4/86	Spectrum Analysis and Frequency Engineering, Inc., informs the FBI about the results of its frequency requirements study. According to FBI program officials, Spectrum Analysis and Frequency Engineering, Inc., found that the FBI would need about 151 VHF frequencies to fully integrate FBI, DEA, and USMS in the northeast region. (See app. IV for additional information on this study.)
12/5/86	Through an amendment to its 4/15/86 agreement, FBI tasks the Institute for Defense Analyses—at a cost of \$10,000—with performing an analysis to determine the minimum number of radio channels that FBI, DEA, and USMS would need to effectively operate in New York City.
2/19/87	Institute for Defense Analyses transmits to the FBI its December 1986 study on integrating the radio systems of FBI, DEA, and USMS in the northeast. (See app. IV for additional information on this study.)
3/10/87	FBI and DEA hold meeting and agree to redirect the integrated voice privacy program because of a shortage of available VHF frequencies. As a result, DEA will retain its UHF system and selectively interface with the FBI's system. The Boston testbed is put on hold.
3/26/87	The Institute for Defense Analyses completes its New York City radio channel analysis, which shows that the need for channels varies depending on the type of operation (for example, criminal or foreign counterintelligence surveillance) and the degree of risk associated with each. (See app. IV for additional information on this study.)
3/30/87	FBI contracts with Spectrum Analysis and Frequency Engineering, Inc., at a total cost of \$58,025—to develop a complete integrated voice privacy frequency plan for the northeast region.
4/30/87	Spectrum Analysis and Frequency Engineering, Inc., delivers its frequency plan to the FBI and confirms that the FBI would need additional VHF frequencies beyond those currently available to the Department of Justice.
7/8/87	DEA begins procurement of dual band radios. These radios will allow DEA to operate on the UHF band and selectively interface with the FBI on the VHF band, as agreed in the March 10, 1987, meeting.
7/31/87	FBI issues a status report on the integrated voice privacy program to the FBI Boston field office. With regard to the northeast region, DEA would continue to operate on UHF and the FBI on VHF within the metropolitan areas of Boston and New York City. Interoperability would be accomplished through use of cross-band repeaters. All FBI resident agencies and DEA resident offices outside these metropolitan areas would operate on the VHF band through DEA's use of dual band radios. USMS would continue with its plan of converting to the federal government's Data Encryption Standard.
11/27/87	FBI announces intent in the Commerce Business Daily to negotiate a sole source contract with Motorola, Inc., to purchase voice privacy equipment for 23 field offices.

(continued)

Appendix III
Chronology of Key Events in the Integrated
Voice Privacy Program (1985 To 1988)

Date	Description
12/21/87	FBI submits a status report on the integrated voice privacy program to the Attorney General. According to the FBI, full, nationwide integration can be achieved, but only at an unrealistic cost in the context of existing fiscal constraints and possibly disruption of other agencies' radio frequencies. The FBI's present strategy is to achieve interoperable radio capabilities in the FBI resident agencies/DEA resident offices through use of dual band radios, and between FBI and DEA in selected metropolitan areas where joint operations will likely occur, through use of cross-band repeaters. In addition, FBI honors USMS' preference to continue with its existing system. USMS cites sufficiency of its existing radio capabilities and lack of a need to access an integrated system as reasons for its preference.
3/10/88	FBI testifies before the Subcommittee on Civil and Constitutional Rights, House Committee on the Judiciary, that it is "leaning" toward the above interoperability approach, but that the concept has not yet been approved by the Attorney General.
3/25/88	Attorney General approves implementation of interoperability approach for the voice privacy program.
3/29/88	DEA receives first shipment of dual band radios.

¹While events prior to 1985 influenced the decision to initiate an integrated voice privacy program, the chronology tracks events from 1985, when the program formally began.

Integrated Voice Privacy: Program-Related Studies and Analyses

Study	Date	Description/results
Boston Testbed	4/85 to 3/87	Description The FBI developed a joint testbed—at a cost of about \$1 million—in the Boston field locations of the FBI and DEA to provide DEA with voice privacy protection, increased geographic coverage, and a joint communications capability. The FBI primarily purchased mobile and portable radios, repeaters, and base stations from Motorola, Inc., and expected to complete the testbed in August 1986. Results FBI officials told us the testbed was operational and used by the DEA Boston field division, although it was not completed as originally envisioned because of a redirection of the integrated voice privacy program. According to a 7/1/86 internal memorandum prepared by the FBI's Boston field office, a myriad of logistical problems of both a technical and operational nature arose, primarily stemming from the different patterns of operations between the two agencies and from frequency limitations—areas that the FBI's Boston field office had anticipated would cause problems from the onset of the testbed. For example, a logistical problem arose when DEA shared FBI provided testbed equipment with state and local law enforcement officers while conducting a joint operation. FBI officials stated that sharing these radios gave the state and local officers unauthorized access to encrypted FBI channels.
Institute for Defense Analyses Cost/Benefit Evaluation of Alternatives	10/85 to 12/86	Description Through a \$250,000 interagency agreement between the FBI and the Department of Defense, the Institute agreed to evaluate the costs and benefits of three options for an integrated FBI, DEA, and USMS radio system in the northeast: (1) Baseline Option Each agency continues to develop its own independent system, and continues to share equipment when conducting joint operations. (2) Limited Integration Option Convert DEA's radio system to VHF and USMS radio system to the Data Encryption Standard, to integrate them with the FBI's VHF, Data Encryption Standard system. (3) Full Integration Option DEA and USMS convert to the FBI system as outlined in option 2 and the FBI links its field office radio systems together by expanding its microwave system. Results The Institute recommended that the FBI select option 3—which would provide full integration and the capability for long distance communications via the microwave system—for about a 6 percent cost increase over options 1 and 2.
Institute for Defense Analyses New York City Channel Analysis	4/86 to 3/87	Description Through two amendments to the previous contract, totaling \$160,000, the FBI tasked the Institute with determining (1) how many radio channels were needed to support the law enforcement operations of FBI, DEA, and USMS in New York City and (2) the minimum number of channels needed for the three agencies to effectively operate in New York City. Results The Institute found that approximately 12 to 32 channels were required above the existing 28 channels to integrate the three agencies in New York City—depending on the type of operation (for example, criminal or foreign counterintelligence surveillance) and the degree of risk associated with each. When the volume of radio traffic was considered with regard to the type of operation, the Institute found that about 42 to 83 percent more channels would be needed.
Drug Enforcement Administration Radio Traffic Analysis of New York City	5/86 to 11/86	Description DEA conducted an internal study to assist the Institute for Defense Analyses in determining the resources required to merge the mobile radio systems of the FBI and DEA in the northeast. Results DEA found that six radio channels were needed in addition to the existing nine channels to ensure agent access to an open channel 85 percent of the time.

(continued)

Appendix IV
Integrated Voice Privacy: Program-Related
Studies and Analyses

Study	Date	Description/results
Spectrum Analysis and Frequency Engineering, Incorporated Integrated Voice Privacy Frequency Requirements and Plan	9/86 to 4/87	Description: Through two contracts with the FBI—at a total cost of \$128,016—Spectrum Analysis and Frequency Engineering, Inc., determined the frequency requirements and developed a complete integrated voice privacy frequency plan for the northeast region of the United States. Results: The contractor estimated that 151 frequencies were needed to fully integrate FBI, DEA, and USMS in the northeast. The Department of Justice currently has 82 frequencies available for its use.

Evolution of the Integrated Voice Privacy Program

Table V.1 summarizes the characteristics of the FBI's original approach, which envisioned full integration, and its revised approach, which has evolved from full interoperability to limited interoperability.

Table V.1: System Approaches to the Voice Privacy Program

Characteristics					
System Approach	Agencies	Frequency Band	Encryption Method	Microwave System Enhancements	Cost Above Internal Systems Cost
Full integration (August 1985 to July 1987)	FBI	VHF	Data Encryption Standard	(1) Increase capacity for additional radio traffic.	\$153.2 million
	DEA			(2) Extend to DEA and USMS field locations	
	USMS			(3) Connect the microwave systems nationwide, as needed	
Full interoperability nationwide, beginning in the northeast region (July 1987 to December 1987)	FBI	Combination of VHF (FBI and USMS) and UHF (DEA) resources	Data Encryption Standard	(1) Increase capacity for additional radio traffic	Unavailable
	DEA			(2) Extend to DEA and USMS field locations	
	USMS			(3) Connect the microwave systems nationwide, as needed	
Limited interoperability nationwide (December 1987 to present)	FBI	Combination of VHF (FBI) and UHF (DEA) resources	Data Encryption Standard	None	\$7.4 million
	DEA				

Status of the FBI's Voice Privacy Program

Table VI.1 provides an overview, as of April 15, 1988, of the FBI's four Motorola, Inc., contracts for voice privacy radio systems. For ease of reference, we have identified the contracts by the names that Motorola has assigned them: Allison, Eierman, Gload, and Kepner. Totals have been provided where applicable.

Table VI.1: FBI's Digital Voice Privacy Contracts

Dollars in millions

Contract	Allison J-FBI-82-129	Eierman J-FBI-83-162	Gload J-FBI-84-142	Kepner J-FBI-85-150	Totals
Number of field offices	1	5	17	13	36
Award date	9/21/82	9/29/83	9/27/84	9/25/85	
Original contract completion date	1/01/84	2/02/85	9/01/86	9/01/87	
Status	Open	Open	Open	Open	
Original contract price	\$13.1	\$32.7	\$51.4	\$50.0	\$147.2
Cost of modifications	\$3.7	\$6.8	\$16.3	\$8.8	\$35.6
Revised contract price	\$16.8	\$39.5	\$67.7	\$58.8	\$182.8
Number of modifications	12	24	36	33	105

The Allison contract covered one field office and 19 FBI surveillance squads.

While all work performed under the Allison contract has been accepted as complete, the Chief FBI Contract Review Unit says it is open from a contractual perspective.

The FBI has obligated about \$183 million for voice privacy systems in the 36 field offices currently under contract, and has accepted systems as complete in six of these offices, as of April 15, 1988. In addition, the FBI indicated that voice privacy related expenses—including towers, buildings, and test equipment—have required funding of about \$5 million over the \$183 million obligated under the contracts.

With 36 of its 59 field offices under contract for voice privacy, the FBI is now addressing voice privacy needs in the 23 remaining field offices. To expedite implementation of its internal voice privacy system in these locations and provide a minimum voice privacy capability nationwide, the FBI announced—in the November 27, 1987, Commerce Business Daily—its intent to negotiate a sole-source contract with Motorola, Inc., for limited amounts of voice privacy equipment. The FBI anticipates providing each of the 23 field offices with one base station and other selected voice privacy equipment. As of April 15, 1988, the FBI was preparing a Request for Proposals for this equipment-only contract. FBI program officials expect to implement full voice privacy systems in these 23 offices through later contracts, and estimate completing the program—with any alterations to accommodate DEA—in 1991.

Comments From the Department of Justice

Note GAO comments supplementing those in the report text appear at the end of this appendix



U.S. Department of Justice

Washington, D.C. 20530

JUL 20 1988

Mr. Ralph V. Carlone
Director
Information Management and
Technology Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Carlone:

This letter responds to your request to the Attorney General for the comments of the Department of Justice on your draft report entitled "FBI Voice Privacy: Update on Program Direction." The report evaluates the Federal Bureau of Investigation's (FBI) progress in implementing the Integrated Digital Voice Privacy (IDVP) program and the changes in direction it has been taking. The purpose of the Department's comments is to provide supplemental information not included in the report relating to the planning, evaluation, and implementation of the IDVP program.

In addition to the IDVP program-related studies and analyses detailed in Appendix IV of the draft report, the following planning and requirements analyses were an integral part of the evaluation process:

- The FBI, Drug Enforcement Administration (DEA), and United States Marshals Service (USMS) engineers participated in a number of informal review and analysis sessions at the FBI's Engineering Research Facility to discuss various aspects of a uniform, consistent approach to managing one IDVP system across the three agencies.
- FBI and DEA personnel made numerous trips to field offices in the northeast region to study and analyze operational and technical needs.
- An FBI Special-Agent-in-Charge Advisory Group provided detailed input concerning the manner in which the FBI and DEA would conduct joint tactical operations in the future.
- The FBI's planning strategy included a technical evaluation as to the best means of providing IDVP to support the National Drug Strategy.

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- The FBI subjected the completed digital voice privacy (DVP) system for the Los Angeles Office to a thorough review for the purpose of assessing its capability in meeting the needs of the organized crime/narcotics squads.

Now on pp 4-5

Page 9 of the draft report refers to studies conducted in the northeast region. The FBI's concentration on the requirements of the northeast region was given priority because this technological design would serve as a model for the remainder of the country. Limiting the analysis to this region permitted the FBI to apply scarce personnel and monetary resources, to the fullest extent possible, toward completing individual field office systems which are threat-driven and require expeditious attention.

While the scarcity of radio frequency assignments discussed on page 9 influenced the direction of the IDVP program, this problem was not an impediment to the realization of a fully integrated system. With respect to radio frequency assignments:

- The 82 frequency assignments held by the Department are commonly shared among agencies in different geographic areas based upon case-by-case evaluations.
- At the onset of this program, the FBI held less than 40 very high frequency (VHF) assignments. The studies enumerated in this draft report disclosed that the FBI needed 110 assignments in the northeast region. Through interaction with the Interdepartment Radio Advisory Committee, the Deputy Assistant Attorney General, Information and Administrative Services, and the outstanding cooperation of other agencies, the FBI has obtained all 110 VHF assignments.

At this point in time, the status of implementation of the FBI's DVP program is as follows:

<u>Offices</u>	<u>Status of Implementation</u>
6	These offices, which collectively contain 34 percent of the FBI's investigative personnel, now have formally accepted DVP systems. This includes 4 of the 5 largest offices.

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| 2 | These offices have DVP systems which have passed acceptance testing; only formal notification to the vendor remains. |
| 28 | These offices have their full complement of mobile and portable DVP radios, with sufficient base stations and repeaters to handle foreseeable emergencies. In 9 of these offices, installation of a complete system is nearing the point where final acceptance is anticipated this year. |
| 23 | These offices will receive their full complement of mobile and portable DVP radios (plus base stations and repeaters sufficient to handle emergencies) within 60 to 90 days after the execution of a contract scheduled for early July 1988. |
| All | Although completion of all systems is anticipated by the end of 1991, both the FBI and Motorola are striving to achieve completion in 1990. |

FBI resources committed to installation of the DVP program include:

<u>Personnel Assigned</u>	<u>Area of Expertise</u>
1	Program manager
6	Radio engineers
3	Microwave engineers (contract employees)
2	Evaluation and testing technicians
2	Communications specialists, frequency assignment matters
1	Contracting officer (part time), with 2 part-time assistants
6	Administrative clerks

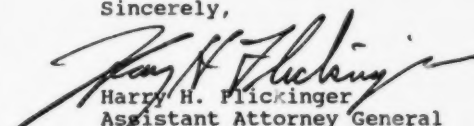
Expenditures for the DVP program to date (payments made plus pending invoices) total \$101.6 million. Projected total expenditures for the DVP program approximate \$205.8 million.

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We trust the above summary information will provide further insight into the planning, development, and implementation efforts associated with development of the IDVP program and the FBI's DVP program. Should you have any questions concerning our response, please feel free to contact me.

Sincerely,



Harry H. Flickinger
Assistant Attorney General
for Administration

The following are GAO's comments on the Department's letter dated July 20, 1988.

GAO Comments

The comments obtained from the Department of Justice provide supplemental information relating to the planning, evaluation, and implementation of the integrated voice privacy program.

However, because information provided by the Department on the number of radio frequency assignments (see p. 26) did not match figures shown in our draft report, we obtained clarifying information from the FBI. In commenting on our draft report, Justice stated that the FBI needed 110 VHF assignments in the northeast region. An FBI frequency management official explained that the 110 VHF frequencies cited in Justice's comments relate to implementation of the limited interoperability approach; the 151 frequencies cited in our report, however, are for full integration.

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